

Multimedia Appendix 12

Characteristics of compared risk models. NR means not reported.

Model	Reference	Prediction time frame	Dataset and Size(N)	Risk factors	Eligibility Criteria	AUC	Sensitivity	Specificity
Bach Model	Bach et al. 2003 [20]	10-year	Carotene and Retinol Efficacy Trial (CARET), N=18,172	Age, gender, smoking duration, smoking intensity, years since cessation, asbestos exposure	Aged 45-69 years, ever smokers, 20 pack-year history, quit within 15 years	0.72	NR	NR
LLP model	Cassidy et al. 2008 [12]	5-year	Liverpool Lung Project (LLP) case control study, N=1736	Age, gender, smoking duration, personal history of cancer, family history of lung cancer, personal history of pneumonia, asbestos exposure	Aged 20-80 years	0.71	0.62	0.70
Spitz and Extended Spitz Model	Spitz et al. 2007 [21] and Spitz et al. 2008 [17]	1-year	Thoracic Center at The University of Texas M. D. Anderson Cancer Center, N=3852(Spitz Model) /1340(Extended Spitz Model)	Age, gender, smoking history, asbestos exposure, exposure to second-hand smoke, medical history, family history of cancer; DNA capacity and bleomycin sensitivity (Extended Spitz Model only)	None	0.57-0.7	NR	NR

PLCO m2012 model	Tammemagi et al. 2013 [19]	6-year	Prostate, Lung, Colorectal and Ovarian Cancer Screening Trial (PLCO), N=80,375	Age, race, education, BMI, COPD, personal history of cancer, family history of lung cancer, smoking status, smoking duration, smoking intensity, years since cessation	Ever smokers, 30 pack-year history	0.797	0.830	0.629
EPIC Model	Hoggart et al. 2012 [15]	1-year and 5-year	European Prospective Investigation into Cancer and Nutrition (EPIC), N= 169,035	Age started smoking, smoking duration, smoking intensity, 10 occupational/env ironmental exposures, single-nucleotide polymorphisms	None	0.845	NR	NR
HUNT Model	Markaki et al. 2018 [10]	6-year	HUNT2 population in Norway, N=45,341	age, pack-years, smoking intensity, years since smoking cessation, body mass index, daily cough, and hours of daily indoors exposure to smoke	None	0.87	0.8185	0.7831
Our model		1-year	Maine Health Information Exchange, N=836,659	118 EHR features during the preceding 6 months	None	0.881	0.8363	0.7681